

GONSTEAD CHIROPRACTIC TECHNIQUE (GCT)

ROBERT COOPERSTEIN, MA, DC^a

^aPalmer College of Chiropractic West and Palmer Center for Chiropractic Research, San Jose, CA. Submit requests for reprints to: Robert Cooperstein, MA, DC, Palmer College of Chiropractic West, Palmer Center for Chiropractic Research, 90 East Tasman Avenue, San Jose, CA 95134. Paper submitted August 7, 2002.

INTRODUCTION

Gonstead is a big technique, in the sense that 58.5% of the chiropractor out there say they use it, although not exclusively, and that 28.9% of patients apparently receive Gonstead care. (1) Vear (2) thinks its analytic and adjustive methods are so typical of the mainstream of chiropractic, so generic, that GCT should hardly be considered a system technique – but we disagree. One need simply ask the next Gonstead practitioner who walks by: “Is Gonstead a system technique, or an umbrella for all things chiropractic?” No doubt what the answer would be. Although flattered by the suggestion that their technique includes so much that is considered mainstream and essential to chiropractic, we would find our Gonstead friends most willing to point out how their methods differ from so many of the other system techniques. We might point out that the GCT is big enough to have what may be called sub-techniques, adherents who espouse different types of Gonstead-inspired practices of chiropractic. We know in advance we will not be able to impress all of the Gonstead-inspired techniques with the accuracy of this work, and yet we hope they will think we captured the spirit of the methods of Clarence Gonstead.

DISCUSSION

Overview

In a phrase, the Gonstead practitioner seeks to “Give the Right Adjustment at the Right Place and at the Right Time.” (3,4) The “right adjustment” is a specific, high-velocity, low-amplitude (HVLA) thrust that corrects a subluxation, and with it, the associated nerve interference. Firczak quotes Dr. Gonstead as having said: “it only takes three adjustments on the wrong vertebra to make it a subluxation.” (5)

The GCT fosters a multifactorial examination procedure directed at identifying the various components of the vertebral subluxation complex, which is congruently regarded as a multidimensional entity. The evaluation procedures include history-taking, visual inspection,

general physical examination, static and motion palpation, static and dynamic (stress) radiography, and instrumentation (primarily thermography). The adjusting strategy itself emphasizes specificity, HVLA thrusting with audible release, lines of drive that favor P-A and eschew rotational vectors, and avoiding thrusts directed against putative hypermobile compensations.

History

Dr. Clarence Gonstead saw his engineering education interrupted by World War I, at which time he was drafted into the military. After serving as an aviation technician, he rejoined civilian life to take a B.S. degree. While a university student, he became disabled with rheumatic fever. Although medical doctors were unable to help him, a chiropractor enabled him to resume his studies within a month. Following this personally impressive experience with chiropractic, Gonstead completed a chiropractic education and began practice in the year 1923. (6,7) The neurocalometer, developed at the Palmer College during his term there, formed an important element of his practice from the beginning. His practice grew to be so immense that by 1964 he had to construct an inn to lodge the many patients who flocked to his new and very large clinic in Mt. Horeb, Wisconsin. A licensed pilot, he would fly his own plane from his personal airstrip to the laboratory of the Lincoln College of Chiropractic, where he would dissect and study cadaver spines. This led to a very elaborate model of spinal derangement, with special emphasis on discopathy. He typically worked 6+ days per week, from 7:00 A.M. until late at night, while somehow being able to pursue a very active teaching and lecturing schedule as well. His personal rapport with patients was legendary.

During his long and distinguished career, Gonstead pioneered the use of many instruments for the detection of “nerve pressure.” He also perfected multi-speed x-ray screens, developed the use of the knee-chest table, refined the Zenith Hi-Lo table, and worked out many new concepts for the chiropractic profession. Among these, perhaps his “disc concept” of the mid-30s, discussed below, has left the most indelible mark on the profession.

Two brothers and Palmer graduates, Alex Cox (1964) and Douglas Cox (1967) joined the Gonstead Clinic staff

to help Dr. Gonstead with documenting his work. (8) In 1974, Gonstead sold his chiropractic holdings, including the Mt. Horeb facility, the Gonstead Seminar of Chiropractic, Gonstead Management Services, and a motor hotel, to the Cox brothers. (3,8) Dr. Gonstead passed away in 1978, leaving his entire estate to the chiropractic profession as "Student Chiropractor Scholarships" and "Teaching Chairs" for the chiropractic colleges. (8)

Definition of Technique-Specific Terms

There is not much jargon utterly unique to the Gonstead system, but there are a number of phrases that take on such importance, and are used so characteristically, that it is worthwhile to list and briefly discuss a few.

- *Subluxation*: "A vertebral misalignment that results in nerve interference;" "The disrelationship of the facets is the result of, and secondary to, the misalignment at the . . . intervertebral disc." (10)
- *Compensation*: "A misalignment in the spine created as a result of the body trying to offset or overcome the imbalances created by a subluxation." (7)
- *Level foundation*: The sacrum is considered the base of the spine; (10) vertebra that begin lateral inclinations of the spine in relationship to the sacral level base are considered possible *subluxations*, whereas those vertebra that terminate these lateral inclinations by regaining a parallel relationship to the sacral base would be termed *compensations*.
- *Lateral wedge, open wedge, "high side of the rainbow"*: All of these expressions refer to the convex side of a lateral flexion malposition, thought to result from ipsilateral movement of the nucleus pulposus.
- *"Through the plane line of the disc"*: Gonstead practitioners are adamant about adjusting vertebra posterior to anterior, with a thrust parallel to the disc plane. Herbst goes so far as to suggest that contrary strategies "may have altered the course of our profession by convincing thousands of chiropractors that 'adjusting' a vertebra cannot change its position, does not get people well, and is painful to the patient" (10, p.81).
- *Posteriority*: Gonstead practitioners believe that with the exception of atlas, a vertebra must subluxate posteriorly in relationship to the segment below (for opposing views, see references). (11)
- *Intersegmental range of motion (IROM) motion palpation*: A type of motion palpation, intended to identify segmental loss of full ROM in any of the 6 degrees of freedom; it is to be contrasted with the

other main type of motion palpation, end-feel or end-play joint assessment. (12)

- *Sympathetic and parasympathetic nervous systems*: Dr. Gonstead believed that the spinal range C5-Occiput and below L5 governed the parasympathetic nervous system, and C6 to L5 the sympathetic nervous system. (13, p.357)

Physiological Mechanisms and Rationale

Subluxation is thought to result from trauma to the spine, which initiates damage to the intervertebral disc and initiates a sequence of events that culminates in nerve interference. According to Cremata et al, (14) Gonstead theorized that subluxation developed in stages, starting with fixation, progressing to misalignment and cumulative damage to the disc, and finally to nerve interference. Contemporary practitioners strongly believe that "the most important part of spinal misalignment is posteriority . . . the least important of spinal misalignments is rotation." (15) The goal is always to move the vertebral body into a more normal position relative to the disc.

Some GCT practitioners state that *subluxation* refers to misalignment of the disc, especially the nucleus pulposus. "The disc, as always, is the key." According to a 1973 newsletter, (16) Gonstead formulated his disc concept in the mid-1930s after doing a number of dissections: "I wanted to see how it was that the nerve pressure was produced. I found that the vertebra slipped on the disc dislodging the nucleus which protruded into various parts of the disc producing the pressure on the nerves. I found that the most common area for this occurrence was at the intervertebral foramen. The technique of adjusting I developed consisted of moving the segments onto the disc repositioning the nucleus. Therein lies the uniqueness of my work." (16)

It has been suggested that an adjustment directed *below* the level of involvement usually fails to improve the patient, whereas an adjustment directed *above* the fixated segment will worsen the patient and increase the pain. The explanation is that fixations are generally accompanied by compensatory hypermobility in superior segments, with ligamentous instability and a tendency toward neurological dysfunction.

Gonstead practitioners tend to be very suspicious of pain as a diagnostic indicator, and certainly address non-painful areas of the spine with as much attention as painful areas. They believe that asymptomatic subluxations in a given area may interfere with improvement in a symptomatic, treated area. (7)

Diagnostic/Analytic Procedures

Cremata et al, (14) after describing vertebral subluxation as a multivariate complex, recommend the diagnostic regimen feature multiple components. Although they recognize that for the most part there is nothing uniquely Gonstead in any 1 of their procedures, they nevertheless claim originality for at least 1 point: "the concept of using most, if not all, of these examination procedures routinely to assist in the identification of subluxated motion segments and the weighing of the relative value of each test based on the magnitude of the deviation from normal, rather than solely the variable the test is assessing." (14)

In order of importance, Alex Cox lists the following diagnostic procedures for identifying the "Right Place" to adjust: instrumentation, digital palpation, motion palpation, visual analysis, and finally, x-ray. (13) On the role of x-ray, Cox attributes the following remark to Clarence Gonstead: "It is very important to find the subluxation on the patient, and then take the x-ray to verify the findings." (13) Indeed, "x-ray examination of the patient is absolutely necessary whenever possible." (7) Plaughter has described the difference between medical and chiropractic usage of diagnostic radiology, especially in terms of establishing in specific cases the safety of HVLA adjusting. (17)

The preferred spinographic procedure involves a 14 × 36 AP full spine view, and a unique lateral view involving two 14 × 18 exposures taken in a single 4 × 36 film (a "split-screen" exposure). The lateral view is said to provide most of the information, given the primacy GCT affords to the disc. The AP view has been stated to provide information primarily about the pelvis. (18) Some contemporary Gonstead practitioners have stressed the value of functional radiographic analysis, primarily stress plain films taken in lateral flexion and flexion/extension. (14) There has also been some recent experimentation and experience with videofluoroscopy. (19)

The fundamental importance of instrumentation (primarily thermography) is thought to be that it establishes the "Right Time:" that is, when the adjustment is most likely to benefit the patient. Gonstead clinicians subscribe to the classic conception that while other examination procedures may pertain to vertebral misalignment and movement abnormalities, it is instrumentation that confirms nerve interference. According to Alex Cox, "If there is no pressure on the nerve, adjusting is not necessary." (18) Cremata et al further explain that "bilateral temperature differential instru-

mentation and galvanic skin response testing are used to identify areas that may be suggestive of local autonomic disturbances or local changes due to inflammation and the subsequent production of heat." (14)

The classic Gonstead vertebral subluxation listings generally include 3 components: *P* for posteriority, *R* or *L* for the side of spinous process deviation, and *S* (superior) or *I* (inferior) for lateral flexion malpositioning. Although his idea does not appear to have been taken up, Troxell proposed adding a quantitative component to the Gonstead listings (eg, $P_{18}L_3S_{10}$). (20) Other contemporary practitioners favor the use of an orthogonal system which considers all 6 degrees of freedom. (13,14)

Gonstead used a "nerve tracer," now known as an Electrical Conductor Scanner (ECS) or Galvanic Skin Response (GSR) instrument. This is consistent with the Gonstead conception that subluxation is always accompanied by nerve interference, which will inevitably result in autonomic nervous system dysfunction. Following negative research findings, (21,22) this tool appears to have been abandoned.

Treatment/Adjustive Procedures

The GCT is fundamentally a full-spine, osseous technique, emphasizing specific high-velocity, low-amplitude (HVLA) thrusts. The GCT's staunch support for HVLA-style treatment is confirmed by Cox's rejection of non-force and soft-tissue techniques: "Chiropractic was founded, designed, and built on osseous spinal adjusting procedures . . . the most sound approach in chiropractic today." (3) "All corrections should be audible . . . a single, solid sound is much more representative of a good vertebral correction than the typical 'rattle' heard in general manipulation." (7) The intent of the thrust is to move the vertebral body toward a more normal weight-bearing position on the disc. This is best effected by a *P* to *A* thrust, with little or no rotation. Unlike some adjusting styles, the doctor releases from the thrust slowly, (7,14) avoiding the rebound that is typical of toggle-recoil type of adjustments.

The criteria for the "Right Adjustment" would include the doctor's contact point, the contact on the patient, the line of drive, the depth of the thrust, and the table used. (3) After praising the great care upper cervical practitioners devote to analyzing and adjusting the atlas, Cox explains that the GCT extends this same specificity and precision to the other vertebrae and the sacroiliac joints. "The most important tool in the reduction of the vertebral subluxation complex is the specific vertebral

adjustment.” (14) Plaughter also emphasizes this specificity in his strongly Gonstead-influenced chiropractic textbook: *Textbook of Clinical Chiropractic: A Specific Biomechanical Approach* (13) and in a book chapter. (12) Although as a general rule the thrust is directed so as to exactly reverse the specific subluxation listing, some Gonstead practitioners will also take into account global motion asymmetries, (14) which may even play a dominant role in determining side-specificity. Some GCT practitioners emphasize the importance of not adjusting the sympathetic and parasympathetic nervous systems (although these are characterized somewhat unconventionally) on the same office visit, at least in the case of an acute patient. In a representative statement, GCT practitioner Firczak states: “Never mix the systems when dealing with any visceral problem.” (5)

There are a few treatment procedures and pieces of equipment, which, although not unique to the GCT, find their greatest application within it. The knee-chest table, invented originally for the purpose of cervical adjusting, is said to improve mechanical advantage in adjusting, especially in the case of obese, pregnant, or very large patients. The cervical chair permits adjusting the articulations cephalad to T3 with the patient in a seated position. According to Cox, “Its effectiveness comes from the ability to use a posterior to anterior and inferior line of drive . . . [this] allows a deep adjustment to the disc while taking into consideration the flat cervical facets.” (7)

Gonstead clinicians almost always use the “cervical chair” for sitting cervical adjustments. (25) It is a chair with an adjustable hinged back, use in conjunction with a strap that fixes the patient’s torso when the thrust is delivered. The “lift and set” motion (25) is thought to explain how the clinician can thrust through the plane line of the disc without jamming the cervical facets, which are quite oblique to the discs. In an unusual endorsement of muscle spasm, 1 Gonstead clinician theorizes that the cervical chair move causes “a splinting reaction by the muscles which serve this joint . . . [and] is necessary so that the patient doesn’t lose too much of the correction between visits.” (25)

Unlike most other chiropractic practitioners (or so it would seem), some Gonstead clinicians are not in general averse to treating certain fractures, such as compression fractures of the mid-thoracic/lumbar area. (5,13,26) There is also a case report describing the adjustive care of a patient with a lamina fracture of C6, although thrusting procedures were not applied to that segment specifically. (27) Plaughter acknowledges the

clinical need to identify fractures prior to initiating chiropractic adjusting, in a case report. (28)

There are a large number of technique provisos, a few representative examples of which may be worth mentioning in passing:

- A segment must go posterior first in order to sublaxate.
- The most posterior segment must be adjusted. (19)
- With the exception of C1, all vertebral adjustments must be directed through the plane line of the disc.
- “Starting from the bottom, adjust the lowest subluxation three to five times before moving up.” (5)
- Nerve interference occurs on the open side (i.e., divergent disc angle side) of the wedge.
- Adjust through the “plane line of the disc,” on the “high side of the rainbow.”
- List the innominate on the side to which the body of L5 is rotated.
- The segment cephalad to a hypomobile subluxation is usually a hypermobile compensation.
- Cox insists that the Gonstead procedures must not be mixed with other technique procedures, lest this “reduce the quality of its application.” (15)

Ancillary Procedures

At the time of a 1984 interview, Cox claimed that the Mt. Horeb clinic, in order to comply with the scope of chiropractic practice laws of the state of Wisconsin, confined its procedures to hands-only adjustment, some advice on nutritional supplements, and general advice on nutrition and exercise. Many if not most Gonstead practitioners are quite content, in whatever state they practice, to limit their ancillary practice to these procedures. Cremata et al state: “As a rule, Gonstead practitioners tend to be full spine adjusters who use minimal adjunctive services. Adjunctive therapies are commonly used only as they assist in the reduction of the vertebral subluxation complex.” (14) Physical therapy is therefore unimportant at best, and better off avoided: “If the patient requires therapy we would like to refer him to people who are in that business specifically” [Alex Cox, quoted in (18)]. Thus, physical therapy is by and large not supported.

Outcome Assessment

There is no effective distinction between the Gonstead diagnostic procedures and outcome measures. The goal of care is the reduction or elimination of the signs and symptoms of the vertebral subluxation complex, although it may be asymptomatic in some cases. Pain is

seen as something of a “great deceiver,” just as likely, if not more likely, to manifest a hypermobile compensation as a true hypomobile subluxation.

Safety and Risk Factors

GCT practitioners generally acknowledge the same contraindications to HVLA thrusting as other osseous practitioners. Nonetheless, in some cases they have deemphasized commonly listed contraindications (eg, managing and even adjusting some types of fractures). (26)

Gonstead clinicians typically enjoin a tremendous opposition to rotational adjustment/manipulation, as manifested in the following representative statement: “The most dangerous technique in spinal manipulation is excessive rotation of the spinal column.” This has led to rather harsh judgements of non-Gonstead manipulative procedures: “We wouldn’t want to be associated with a doctor who lumbar-rolls a patient both sides, or does his cervical adjustments supine” (Alex Cox); “There is nothing specific about the osteopath’s approach. They just move a bone without any feeling or concern . . .” (Doug Cox). (18)

The prohibition of rotational manipulation owes some of its militancy to the alleged relationship of vascular accidents to rotatory cervical adjustments. GCT practitioners believe that “the use of Gonstead cervical adjustments will minimize the risk of vascular accidents.” (5) Likewise, the elimination of flexion and rotation in the adjusting line of drive is thought to reduce the potential for damage to the lumbar discs. (14)

Plaugher and Lopes (24) describe a few contraindications specific to the knee-chest table, including “fractures of the lamina, severe osteolytic activity and any segment exhibiting normal or hypermobility.” Severe lumbar hypolordosis presents a special problem, as does severe hyperlordosis of both the lumbar and cervical spines, which is unlikely to benefit from a thrust which increases extension. A patient who has trouble relaxing is unlikely to be treated effectively on a knee-chest table. W.A. Cox lists each of the following as contraindications to knee-chest adjusting: pain on lumbar extension, lumbar kyphosis, lower spine spondylolisthesis, and advanced low back spondylosis, osteoporosis, or osteoarthritis. (7,14) Cox also lists some rather obvious contraindications for side-posture lumbar adjustments, including osteoporosis, hip prosthesis, and inability to bend the knees. (7)

Evidence of Efficacy

Diagnostic efficacy

There have been a number of studies concerning the reliability of Gonstead x-ray line marking procedures. Phillips (29) compared pelvic x-ray line marking systems developed by Gonstead, Hildebrandt, and Winterstein. The numerous discrepancies that arose indicated the need for continued research on the reliability and validity of these procedures. Plaugher and Hendricks found “substantial” intra- and interexaminer reliability in using the GCT x-ray line marking procedures, and in every case the intraexaminer test/retest reliability was greater. (30) On the other hand, Burk et al, (31) in their study of Gonstead x-ray line marking, could not obtain better than “slight” to “fair” interexaminer and “fair” to “moderate” intraexaminer reliability. In a review article, Harrison et al (32) concluded that the Gonstead line marking procedures are highly reproducible. Another study did at least validate the reproducibility of patient positioning for pelvic radiography, as measured by the Gonstead x-ray line marking procedures, at 1 hour and at 18-day intervals. (33)

There is precious little information available on the *validity* of the Gonstead x-ray line marking procedures. Nevertheless, Specht and De Boer used them as the analytic engine in their study of the relationship of anatomical LLI and abnormal spine curves and curvatures. (34) Schram et al (35) x-rayed a dry articulated pelvis in a variety of tilted and rotated positions, and then used Gonstead line marking rules to analyze the films. They found that although small amounts of rotations did not affect PI/AS listings, they did dramatically affect IN/EX listings: each degree of rotation produced 1.87 mm change in IN/EX listings. Pelvic tilt had minimal affect on both PI/AS and IN/EX calls. These data imply that the Gonstead pelvic x-ray marking procedures are quite sensitive in detecting real Y-axis misalignments—or, from the opposite point of view, are very likely to generate bogus listings as the result of even minimal patient Y-axis positioning errors. Both Hildebrandt (36) and Harrison (37) came to similar conclusions.

Jeffery, (38) in a doctoral dissertation performed at the Anglo-European College of Chiropractic characterized 3 general methods of radiometry for pelvic torsion. Adapted versions of these methods were then used to calculate innominate tilting of a dry specimen tilted to varying known degrees and radiographed. Since Jeffery did not actually produce pelvic torsion in the dry specimen, having merely rotated the entire pelvis in the

sagittal plane and applied the line marking rules to one hemipelvis, the work is not entirely satisfactory. That stated, Jeffery found the Gonstead method neither reliable nor sensitive for detecting AS/PI relationships compared with the other 2 methods, which were both adequate.

Cooperstein (39,40) investigated the effects of pelvic torsion on bilateral innominate measurements through a computer simulation. He concluded that the Gonstead line marking system for innominate torsion could be potentially validated provided a number of stringent conditions are satisfied: there is a relatively large amount of pelvic torsion, in a patient with a steep sagittal plane sacral base angle, and for whom full spine radiography is used. The analytic system would not be useful for patients with normal or flattened sacral base angles, nor for small degrees of pelvic torsion, nor in sectional radiography.

Zengel and Davis, having devised a mathematical system for determining x-ray projectional distortion, (41) applied this methodology to calculate the effects of induced vertical and horizontal vertebral body off-centering (42) and of induced lateral flexion malposition. (43) They found that "in every instance, off-centering produced no measurable effect on the position of the constructed Gonstead lines" drawn parallel to the vertebral end plates in an A-P x-ray. Therefore, these lines would be interpretable "as is," there being no need to correct for projectional distortion.

It has already been noted Gonstead and some later GCT practitioners used to use an GSR (Galvanic Skin Response) instrument. It was advocated to identify both spinal subluxations and extremity misalignments, (14,23) in the belief that articular dysfunction would be manifested by alterations in electrical conductance. However, Nansel and Jansen (44) found very poor test-retest reliability in using the ECS, and furthermore, that the instrument seemed to *create* the lowered electrical resistance it was designed to detect. Another interexaminer reliability test also generated only modest levels of interexaminer concordance, leading the investigators to conclude that the use of the ECS in examining asymptomatic subjects is not presently supported. (22)

Plaughner, in a review of the literature regarding spinal thermography, concluded that the hand-held thermocouple devices popular among Gonstead practitioners (which descend directly from the neurocalometer), seem to manifest less interexaminer reliability than infrared devices. (17) His own study of the Nervo-Scope generated at best equivocal results, (45) but with an

interesting tendency for intraclass correlations to be higher for a second series of observations: "The authors speculated that as the instrument was used in a repeat sequence, positive findings became more stable and frivolous temperature fluctuations were 'erased.'" (17)

According to Plaughner, (12) there have been no clinical trials aimed at evaluating the value of Gonstead-style intersegmental range of motion assessment (motion palpation). He cautions against coming to any premature conclusions concerning it, pro or con.

Treatment efficacy

From a basic science point of view, Kawchuk and Herzog (46) showed that Gonstead-style thrusts generate forces similar to those generated by similar HVLA styles, and considerably higher than, for example, the force generated by a hand-held percussive instrument.

There are a few case reports and series, and 1 randomized trial, on the somatovisceral effects of Gonstead-style adjustments. Both Hood (47) (uncontrolled case series) and Plaughner (48) (1 case report) reported success in controlling hypertension in treatment programs including Gonstead-style specific, short-lever HVLA thrusts. Nansel et al, (49) in examining the effects of similar adjustments on asymptomatic subjects, found no changes in blood pressure, heart rate, or plasma catecholamine levels. There are case reports suggesting there were adjustive benefits in a case of epilepsy, (50) reduction of headache-related symptoms in a case of temporomandibular disorder, (51) and a case of myasthenia gravis. (52) Most recently, Plaughner et al (53) conducted a practice-based randomized controlled-comparison clinical trial of Gonstead adjustments vs. massage in patients with essential hypertension. The control group showed the most improvement in their hypertensive state, followed by the adjustive care group, and the massage group improved the least.

In a study designed to determine if HVLA adjustments could alter static radiological parameters such as retrolisthesis, the extent of the lordotic curves, and Cobb's angle. Plaughner et al (54) measured a significant but very small reduction in retrolisthesis, the only intersegmental subluxation parameter assessed in their study. There was a high degree of inter-examiner reliability in measuring some, but apparently not all, of the parameters. There were letters to the editor and rejoinders.

Nansel et al (55) found that a Gonstead cervical chair move, delivered to the lower cervical spine on the side found to be most restricted in lateral flexion by gonio-

metric examination, would dramatically reduce the motion asymmetry. Another follow-up study (56) demonstrated that this amelioration of asymmetry would prove stable for at least 48 hours in subjects lacking a previous history of neck trauma, whereas the asymmetry in passive end-range would tend to return among the subjects who had experienced previous trauma. In yet another follow-up study again using cervical chair adjusting methods, Nansel et al (57) were able to demonstrate that Gonstead upper cervical adjustments were relatively more effective than lower cervical adjustments at ameliorating cervical rotational asymmetry, whereas lower cervical adjustments were relatively more effective than upper cervical adjustments at ameliorating lateral flexion asymmetry.

There is a case report of successful treatment of a meniscal tear, (50) and another describes resolution of symptoms in a man who had received a clinically unsuccessful discectomy of C6. (58) Lantz and Chen (59) investigated whether high-velocity, low-amplitude adjustive care (including Gonstead adjustive procedures) would influence the course of adolescent idiopathic scoliosis in curves less than 20 degrees. Since not only Gonstead but Diversified procedures were used, and heel lifts and lifestyle counseling were also available to the patients, we cannot conclude that Gonstead procedures were ineffective, despite the finding that chiropractic care was not effective in reducing the severity of scoliotic curves.

CONCLUSION

- Vear, after distinguishing between what he calls "*general adjustive technique*" and technique "*system approaches*," says that the GCT "comes closest to having met his criteria for its acceptance as a non-system technique." (2) It is not obvious that what Dr. Vear meant as a compliment would be taken as such by all Gonstead practitioners, who may prefer being regarded as distinct from other technique systems.
- Gonstead believed C5-Occiput and below L5 governed the parasympathetic nervous system, and C6 to L5 the sympathetic nervous system (13, p.357). The obvious discrepancy compared with mainstream descriptions of the anatomy of the nervous system warrants further consideration.
- It is common for GCT to recommend palpating for edema and other signs of acute inflammation. For example, Cremata states that GCT examination procedures are directed at identifying "swelling, heat, altered function, redness, and pain." (14) Since chronic inflammation is a clinical entity very

different from acute inflammation, essentially lacking the cardinal signs such as swelling and redness, it is not obvious why one would expect a chronic patient to display such signs.

- Among the various thermography technologies, Gonstead practitioners usually use dual probed devices such as the Nervo-Scope, rather than infrared devices that do not touch the skin. As can be seen in obvious reddening of the skin of patients examined using tools like the Nervo-Scope, we can not rule out that it produces acute inflammation during the examination process. Thus, it may *produce* the asymmetry it purports to detect.
- GCT practitioners follow a multivariate approach to subluxation identification, rather than rely on any one or very few examination findings. (14) Given the multiplicity of diagnostic procedures claimed by GCT advocates, and given the claim that it is the concordance of several such procedures rather than any 1 finding in particular that confirms the subluxation complex, it would be useful to note if indeed clinicians using such a multivariate system would achieve an acceptable degree of concordance. This is especially important given the many negative studies on the interexaminer agreement of *individual tests*.
- Rhudy et al, (60) hypothesizing that better results may accrue when "the findings of several different procedures are interrelated," examined the interexaminer concordance of 3 trained clinicians when they employed a multifactorial examination procedure consisting of Gonstead-style AP full spine radiography, motion palpation, and dual probe thermography. The levels of agreement turned out to be quite low, on the basis of which the investigators concluded "clinical judgements are probably based more on other subjective impressions on the part of the chiropractor than the information derived from the procedures themselves." (60) Jansen et al came to a similar conclusion from a more theoretical point of view by performing a Monte Carlo experiment (a methodology that involves generating random numbers to simulate experimental findings) that determined chance concordance rates in a multiple diagnostic test scenario. (61)
- The Gonstead emphasis on disc pathology, and their discocentric view of the subluxation entity, seem quite consistent with contemporary views on the high rate of occurrence of discogenic back pain. (62)
- The Gonstead advocacy of the AP full spine radiological view finds support in a review by Taylor, (63) who concludes "full-spine radiography is an

effective diagnostic and analytic procedure with an acceptable risk/benefit ratio."

ACKNOWLEDGEMENTS

This review of the Gonstead Chiropractic Technique is in the tradition of several other technique reviews (64–71) that were published by members of the former Panel of Advisors to the ACA Council on Technique. The template used for these earlier reviews has been somewhat revised for this current review, notably in the addition of the *Closing Comments* section, which features critical commentary. I would like to thank the individuals who sat on that Panel of Advisors, who did so much over many years to advance the process of technique evaluation, many of whom now carry on that tradition as members of the Technique Consortium of the Association of Chiropractic Colleges.

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